

# Pre-production of Printed Packaging Samples

*B. Dielemans*  
*IPT TEAMPACK®*  
*Eerbeek, Netherlands*

## History of the “World of Packaging”

### Introduction of Self-Service Outlets

The development of self-service outlets in the early second half of the past century has given a tremendous impact on the status of packaging. Packaging in order to distribute all kind of food and non-food products.

Within this scope some elements have dominated the development of the presentation from packaging in the past years, such as:

- a) Type and quality of the substrate (raw material);
- b) Type of the lay-out (construction of the package);
- c) Type of the design, including the use of full-colour;
- d) Type of the printing-technique;
- e) Type of the logistics (thus including warehousing).

It's worthwhile to mention that most of the innovations have been realized by means of wishful thinking although sometimes the lucky hand called serendipity has helped the packaging-business to create a new or modified package.

Quite a number of people and institutions have been involved with all these innovations; from a variety of designers, engineers of machinery and other equipment up to consumers who have given their comments to the buyer's management after using a certain type of packaging.

### Voice of the Consumer

Gradually the voice of the consumer has got a major influence on the final practical result of the package. Charismatic leaders, especially those who are involved with serious investments, have made it their use to call these innovations a matter of progress. Scientifically this is nonsense, basically there is no progress at all, there is only a change. By solving a problem (in this case ending up in a new or modified packaging) one has learned to think that the new or changed packaging is better. In reality one is automatically creating sooner or later one or more new problems: It's the evolutionary law of keeping misery, or even better "more misery than we have had before". But that's quite another story !

In the meantime the packaging-business on world-scale (being a part of the nowadays so called “old economy”) has shown a stable, growing activity. Based on facts & figures the packaging-business was up to the early nineties a safe measure for the rate of growth

(index) of the general economy. With the definitive start of the governmental policies concerning environment it must be said that there is an aiming tendency to reduce the total volume in pieces and weight of packaging. Market-standing in the future: Wait and see.....

## Packaging Decision-Tree

### The 6 branches

In the World of Packaging one can consider the following 6 branches:

- 1 INSTITUTION  
(Official and non-official)
- 2 DESIGN  
(Advertising agency)
- 3 PREPARATION  
(Pre-production facility)
- 4 SUPPLIER  
(Converter, trader)
- 5 BUYER (USER)  
(Consumer-packaging or industrial-packaging)
- 6 CONSUMPTION (ENDUSER)  
(Consumer or industry)

### In View of These 6 Fields

Marketing-experts in the global food & non-food industry (thus Buyers [Users] of consumer or industrial packaging) show a permanent drive to introduce new or modified products for the consumer- and industrial market, this in order to keep the investments, the economy going. In our civilization-ideology one has accepted this phenomenon, it's a wheel that constantly keeps on turning.

After a new or modified product has been nominated by the "buyer" to be brought onto the market, there is - for several reasons - a rising need to create a sophisticated package which has to include all the necessary requirements.

### Preparing the Final Decision, Launch-Pad

All the pre-work to be done in order to organize such a package as well as the decisions that have to be

taken into consideration in order to launch the package, has to be found at the mentioned levels 2, 4 and 5.

While preparing the packaging and especially when it comes up to take final decisions, the buyer (user) is constantly busy in minimizing the risk of failures. With a maximum of secrecy (competition is watching you!) in mind they love to accomplish the "make it sure" policy. Basically this policy insists mainly on verifying statements (knowledge, words) and performing of trials (materials, converting).

At the final stage of innovation (decision to launch) from a new or modified product (thus packed in a new or modified package) the decision "go/no go" has to be made by the company's management of the buying-party in the packaging-tree.

In these postmodern times General Management, Marketing and Controlling of packaging "volume-growing" buyers (users) experience a rapid increasing need to minimize the risk of investment. So the final packaging decision has to be made at level 5 because of their total responsibility for the R.O.I. (Return on Investment). It's the buyer, the user of the consumer- or industrial packaging who has to watch his budget carefully.

## Consumer-Packaging

### Particular Interest

Decision-makers show a particular interest for the worldwide large-volume group of small size CONSUMER-PACKAGING, packaging with products that are sold in the channel of distribution-outlets to consuming endusers, thus for the retail-business with e.g. super- and hypermarkets. Concerning industrial packaging the character of the presentation-value is partly based on other criteria.

These packages have the shape of a box, tray, display (more or less rigid) or a flexible performance. Nearly all of these packages are printed full-colour (4 up to 6 or even more colours) in offset, rotogravure or flexo and are manufactured out of a wide range of substrates like for instance folding boxboard, corrugated board, polypropylene, polystyrene and other types of plastic, glass, aluminum, etc.

### Presentation-Value

Better than ever before the marketing-staff is aware of the fact that the consuming end-users define the degree of success of the new or modified product. In daily operations the purchasing department is responsible for e.g. the technical quality of the packaging.

Marketing, product and/or sales managers of the food & non-food business are in charge of the promotional aspects. They know that the design is one of the high-ranked marketing-items, may be even the most important one within the wide range of promotional techniques to upgrade the presentation-value.

This is the reason why all the mentioned branches 1 to 6 do encourage each other to pay more attention to

this variety of promotional aspects. Facts which are mainly based on a sophisticated construction, size and design.

## Resuming

- 1) Talking about consumer packaging everybody who is in concern with the preparation itself and linked up with the pre-production has high expectations of the design, the presentation of the package;
- (2) Those who are involved with the consumption define the degree of success, they cause the decision whether the launch and follow-up (pick-up) of the new or modified product in that package will be successful;
- (3) The bitterness of a poor design (please read: return on investment) remains after the sweetness of a low project-budget is forgotten.

## Conclusion

The earlier a printed sample is made the better for the buyer(user) in order to control the project.

## Sampling Historiography

### Unprinted Samples

Hence technical and economical reasons the sampling of unprinted packaging has never been a serious problem. Not for the supplier of the packaging, neither for the buyer (user) of the packaging. This was and still is a blessing for the buyer (user) in order to verify whether the runability of the packaging-machinery is perfect, at least acceptable.

By getting rid of the manual way of filling and closing of packaging the introduction of mechanical processes has given a push in the demand for small series of unprinted samples. Within this context a productionrun of some 500 or 1.000 pieces of packages is a quite normal request.

### Printed Samples

The demand for printed packaging consists out of 5 segmental areas, translated to production-data out of 5 types of runs with the remark that the number of prints and packages per used sheetsize is packagingsize-dependent:

- 1) Listed as pre-production with the qualification proofing, quantities 1, 2, 3 up to usually a maximum of 5 pieces;
- 2) Listed as pre-production with the qualification sampling, quantities 1 to 25, 100 or even - depending the size of the packaging - e.g. 250 to a maximum of 500 pieces;
- 3) Listed as pre-production with the qualification sampling or as a regular production-order, quantities specified as small, e.g. 250 - 1.000 or e.g. 2.500 pieces;

- 4) Listed as regular production-order, quantities specified as moderate, e.g. 1.000 up to e.g. 10.000 pcs;
- 5) Listed as regular production-order, quantities specified as large or very large with runs up to millions of pieces.

#### **Paper's Key-Issue is Related to Small Volumes**

The key-issue of this paper is based on item (2), the market of digital printed samples with runs from 1 up to 25, 100 or even 500 pieces of packaging (size of the package defines the maximum quantity).

Item (2) has the status of pre-production from very small series of packaging and isn't a regular production in spite of the requested quantity.

Generally one can consider the following markets, demands for the need of:

- Mock-up (just 1 piece)
- Few samples (usually 2 - 5 pieces)
- Some samples (usually 5 or 10 to 25 pieces)
- Seriate samples (25 - 100, even 250 or 500 pcs)

#### **Where or to Whom These Samples Will Be Shown ?**

A) Preparing a final decision in design:

- Advertising agency
- Consumer panel (unprepared)
- Buyer's Marketing and/or Sales Department
- Buyer's Boardroom

B) After the final decision in design has taken place:

- Buyer's Company showroom
- Buyer's Sales demonstration
- Consumer panel (prepared)
- Buyer's Exhibition

#### **Fix/Ready Samples versus Virtual Possibilities**

Generally spoken by so called qualified spokesmen the ICT-business is an accepted culture that will bring human beings an easier way of doing business including a better way of life. In the long-term not everybody does share this opinion, there are some mixed feelings about the development in human luck and happiness.

Implemented in today's situation of packaging-sampling it's possible to create samples (construction and design) from which one can see the result on the monitor. In reality it's a proven fact and definitively a perfect method in relation to progressive results.

However a proven disadvantage is that one can't take such a sample in one's hand, feel it or e.g. smell it. Firstly every decision-maker likes to have his sample in hand, secondly one likes to take the time to think about the decision, e.g. by judging this sample in (expected) unstressed surroundings at home, etc.

#### **Introduction of Inkjet Techniques**

In consequence of the offered technique inkjetprinting has made it very well possible to manufacture short runs of packaging-samples in an effective way, at least based on to day's market-standing.

It's a technique with a clean procedure and evolutionary results ahead. Related to the paper's title your author has listed the demand and order for samples in category (2).

The production of short runs can also be done with conventional methods. It's a matter of workflow-system, quality of the printing result and last but not least the price that will decide whether inkjetprinting is yes or no the best solution.

#### **Inkjet Coated Substrates, e.g. Board**

A study of the needed substrates came in the picture with the introduction of standard types of printers with acceptable width. With the objective of manufacturing very small series of packaging to be printed on a relative cheap printer. All of the firm regular existing machine-coated substrates to be used on these printers will end up in a complete negative result. Only existing uncoated substrates will do the job, that's to say these qualities show at least some sort of a printing-result.

Generally spoken one can analyze the total demand of samples in 2 types depending on the purpose of the packaging : Samples for packaging with a request in low grade and samples with a high grade of printing result.

The high grade qualities are mainly (not exclusive) requested in order to verify whether the design is yes or no acceptable for the use in outlets, thus for "consumer-packaging". Hence this purpose the market likes to get samples with a glossy appearance in order to imitate the effect of varnishing. As mentioned before quite a volume of these packages are made out of board, to be specific: there are several types of board.

#### **Printing Results on Boardqualities**

For a low grade one can use quite a number of uncoated qualities that will do the job. It's matter of testing what quality will satisfy one's requirements.

For upgraded ideas about a printing result one will absolutely need an inkjet coated type of substrate. On the market is available a glossy and a mat appearance.

Basically IPT Teampack® can deliver both items, nevertheless the market is concentrated on the glossy ICB-qualities folding boxboard (GICFB) and corrugated board (GICCB) (both listed per today) ; in the near future IPT Teampack® will enlarge this program with more inkjet coated substrates. High-gloss has the advantage of illustrating the effect of being varnished after printing but the unavoidable disadvantage of not being waterproof and not having a licence for food-approval. But who cares about that in relation to the purpose ? The mat appearance is waterproof but has a higher price. Since the introduction of ICB-board IPT Teampack® hasn't got any demand for a mat appearance, nevertheless it's foreseen that the mat quality will give a certain demand.

#### **When Will a Digital Printing Quality Seen with "His Master's Eye"?**

For the time being it's impossible to compare the quality of a digital printing result with the wellknown conventional printing-techniques like offset, flexo,

rotogravure and screen. Besides this difference (being a technical opinion) the traditional printing-freaks are used to work with their basic system whereby - for instance- (a) one talks about the number of colours and (b) the international code (PMS) for all kind of possible mixed colours. That's why for the moment the printing result of digital printing will immediately be related to some vital orthodox standards and measurements.

There is a whole lot of shaking going on within the circus of the printing-quality of inkjetprinting versus all the traditional printing-techniques. It's foreseen that in the very near future a digital proof will be the starting-point for further printprocessing, irrespective of the preferred - or better said, due to production - chosen conventional printing-technique.

Going into more specific details concerning quality there are two points of view:

- a) Along with the introduction of digital printing techniques one should either introduce a new system of judgement, or
- b) One will have to adjust or apply the digital printing techniques to the traditional system.

Within this paradigm you really don't have to be a science-specialist in order to recognize that it probably will take a short generation in order to create just that specific type of judgement in the land of printing quality that unanimously will be in favour of the digital world and whereby specialists in digital printing quality will be ranked as beloved masters.

This of course with the remark that such a position can only be realized when nowadays digital techniques will improve up to an efficient and sufficient production level at large scale volumes in combination with the use of various substrates.

### **Printing Result of Printed Samples = Look-Alike**

Regarding all the mentioned aspects (like shortrun sampling, inkjet coated substrates) the only way of judging the IPT Teampack® digital printing quality is by nominating the achieved result as being a "look-alike".

Why ? The result gives a good imitation of the reality, based on daily experience the achievements are okay. This is to be seen in a frame-work where in view of the purpose of the printed sample one can suffice with such a printing result.

Make note of the fact that sometimes the quality is even printproof-reliable for an order-run whatsoever on any traditional printing-machine and sometimes it's (far) away from such a (needed) decent result.

## **Processing Small Runs of Packaging Samples**

### **Basic Elements for Part 1 = Printing**

- The right type of inkjet printer (sometimes preferred to be modified in a workfriendly frame construction) with the right printing-resolution and capacity;
- The right type of substrate (yes/no inkjet coated);
- Knowledge of colour management;

- By lack of an in-house reproduction unit there is a need for a remote-facility infra-structure;
- Helpdesk, well organized by the supplier of the printing unit, reproduction-facility or supplier of the inkjet coated substrate.

### **Basic Elements for Part 2-A = Cutting & Creasing**

- Cutting & creasing unit.
  - A) Quite a large group of potential users (from which most of them are packaging-suppliers) have already a large size digital cutting & creasing unit, sometimes including a mounted "printhead". In order to maximize the service to their customers (buyers) this group uses these "plotters" mainly for manufacturing unprinted samples, a process with such a high capacity p/m<sup>2</sup> that it reduces the possibility for an adequate use of the printhead. This group of customers has the possibility to install a separate (cheap) printing-unit in such a way that printing and cutting & creasing are 2 completely separated and specialized (know-how) processes.
  - B) A potential group in the market who doesn't have a cutting & creasing unit can solve this problem by the following methods:
    - 1) Install an all-round sampling-machine in which first the printing and next the cutting & creasing process both can be effected.
    - 2) Install a cutting & creasing plotter with a size that meets the specific requirements due to the size of the sheets that will be used for printing samples.

### **Basic Elements for Part 2-B = Folding & Gluing**

Hence the requested number of pieces of the printed packaging samples this process will always be done by hand (manual). It's worthwhile to mention that one has to take the right type of glue for the chosen substrate.

### **Substrate-Requirements for (1), (2) and 3)**

- (1) Considering all types of board and some types of plastic all available machinery is based on sheet-converting; for the flexible packaging roll-converting is adequate.
- (2) Make note of the fact that in order to get the required printing quality on the chosen substrate there is a multi-balance position between:
  - a) Quality of the inkjet coated substrate
  - b) Quality of the ink
  - c) Installed printing-speed

## **The Unknown Market**

### **Historical Background**

Since about half a century all the decision-makers in the packaging-tree have been involved - better to say educated - with the phenomenon that there was either no possibility to get printed packaging samples or the price and/or delivery time was out of the question: Forget it !

A justified reason why over so many years there has grown a policy-procedure in which the subject "Ordering printed packaging samples" anyhow hasn't got a special attention.

Nowadays so many people in the packaging-tree still aren't aware of the possibility that ordering some printed samples will be a matter of selecting the right supplier of e.g. printer, board and additional equipment.

### **Necessary Equipment**

A verification so far as possible the idea of manufacturing digital printed samples has been born somewhere in the middle of the nineties, author has seen an official document dated 1994 in which a method is described how to produce these samples based on a printer resolution of 300 dpi. Author has also seen samples printed on corrugated board printed with a system based on said document in 1995.

At that time there was already awareness about the fact that one had to build a machine suitable for several kinds of board (types as well as qualities) and this in combination with a variety in thickness of all these board-qualities (caliper). A major part of packaging made out of board has a range in thickness with an average minimum of 0,40 mm (folding boxboard) and an average maximum of about 6 mm (corrugated board).

A second important point of attention is the wide range of sizes of the packages to be made. To give an idea: from relative small cartons for toothpaste up to boxes for fruit or even e.g. TV-sets.

From the beginning there has been the idea that there is basically 1 system in order to manufacture these boxes (take "sheets") are 2 engineering methods to print these sheets:

- a) Friction feed (the moving sheet)
- b) Flat bed vacuum (the moving printhead)

Up to now these engineering systems have been developed in 2 directions. Regarding a tendency to specialism one may expect that both systems will find their way on the market. It's a proven fact that the weight in combination with the size of the board has a key-function whether a client will choose for friction feed or flat bed vacuum.

And to enlarge the complexity: So many packages in the distribution outlets are made out of plastic materials like polypropylene, polystyrene etc. Last but not least there are packages made out of aluminum, glass, etc. Quite a few of these packages can only be converted out of rolls.

### **Market Investigations: Who is Interested ?**

It's a question that can't be answered per today. Actually one can find potential clients at the levels 2, 3, 4 and 5 in the packaging-tree. Normally one should expect that the largest demand should be found at level 4. But at level 4 there are quite some problems that mainly have to do with a lack in know-how and/or availability of capital. Many suppliers at level 4 suffer with serious lower end of the market policies (low budget plants).

### **IPT Teampack® : Turn-key Systems**



#### **Program of Services**

IPT Teampack® - with marketing, production, logistics and research & development in the Netherlands - can provide with and advice in digital graphical turn-key systems, materials and machines for the global packaging market:

- 1) Manufacturer of small runs of printed (firstly consumer-)packaging samples, mainly covering the regional market but also abroad (with remote-facilities the market is unlimited);
- 2) Manufacturer of inkjet coated board (ICB), qualities in standard sheet-sizes, packed in standard quantities per size; in the near future some substrates will be delivered on roll;
- 3) Supplier of all kinds of resources for creative processes like printers, cutting & creasing plotters as well as packaging development system & graphical software.